

TWO LARGE AUSTRALIAN ORB-WEAVING SPIDERS,  
*ERIOPHORA TRANSMARINA* (KEYSERLING 1865)  
AND *ERIOPHORA BIAPICATA* (L. KOCH 1871)

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ABSTRACT

*Eriophora transmarina* and *E. biapicata* have been re-described. A neotype has been established for *E. biapicata*. *E. transmarina* is found along the eastern coast of Australia from New South Wales to New Guinea. *E. biapicata* occurs in the western areas of the eastern states, in Central, South and Western Australia.

There has been continual confusion about the identity of the large orb-weaving spiders in Australia. The controversy has mainly centred on *Epeira transmarina* Keyserling 1865 and *Epeira producta* Koch 1867. Koch (1871) re-described and figured ♂ and ♀ *E. producta* from Brisbane as well as ♀ *E. transmarina* from localities in Queensland and New South Wales. Keyserling (1886) believed *E. producta* to be a synonym of *E. transmarina*. He re-described and figured ♂ *E. transmarina* and believed *E. transmarina* (*sensu* Koch) to be a new species, *E. annulata*; this spider has a short epigyne and may be penultimate. It was synonymised with *Araneus heroine* by Dondale (1966). The *Epeira* spp. were transferred to *Araneus* by Simon (1895, p. 800). Hogg (1900) and Rainbow (1909, 1911) recognised that there were at least two large *Araneus* spp. Chrysanthus (1960) discussed the problem and the literature in detail and decided that the New Guinea species was *A. productus* and that *A. transmarinus* was probably a separate species. Dondale (1966) examined the type specimens from Hamburg and figured specimens from Canberra. He concluded that *A. productus* was a synonym of *A. transmarinus*. Chrysanthus (1970) agreed with Dondale's findings. Since then the view that there was only one very large orb-weaving spider, *Araneus transmarinus* that was found over the whole of Australia has been current (Main 1976). However large male spiders which differed from *A. transmarinus* by the possession of spurs on both coxae I and II had been collected from the western

areas of Queensland. An examination of Dondale's description of ♂ *A. transmarinus* from Canberra reveals that it also bears a spur ventrally on coxae II (in all other descriptions of *A. transmarinus* there is a spur on coxa I only.)

To clear up this problem specimens of these large *Araneus* held in overseas collections were examined as well as specimens from museums in Australia and New Zealand. Archer (1951) assigned both species to *Eriophora* and Levi (1970) mentions the presence of this genus in Australia and New Zealand. Much earlier Musgrave (1933) had published a leaflet describing the garden orb-weaving spider of Sydney as *Eriophora transmarina*.

Material from the following museums has been examined: Zoologisches Staatinstitut und Zoologisches Museum, Hamburg (ZMH); British Museum Natural History (BM); Forschungsinstitut Senckenberg, Frankfurt (SMF); Zoologisches Museum Humboldt Universitat, Berlin (ZMHU); Canadian National Collection of Insects, Ottawa (CNC); Otago Museum, Dunedin (OM); National Museum, Melbourne (NM); Australian Museum, Sydney (AM); South Australian Museum, Adelaide (SAM); West Australian Museum, Perth (WAM); Australian National Insect Collection, Canberra (ANIC).

*Eriophora* Simon 1864

The posterior part of the abdomen is generally high above the spinnerets. There are often

posterior and dorsal tubercles on the abdomen. The lateral eyes of the males are on a dorsal stalk, the medians on a projection. The chelicerae are concave anteriorly, providing space for the large palpal organs. The patellae of the ♂ palps have 1 apical spine, 1 spine and a companion hair, or rarely 2 spines as in *Araneus* (Archer 1951). Coxae I have a hook on the distal margin; tibiae II are modified. In the ♂ palp the median apophysis is transverse and elongate with acute or sub-acute spurs, blades or lobes. The radix, embolus and conductor are elongate. A paramedian apophysis is present by which it may be distinguished from *Araneus* (Levi 1970). The cymbium is narrow and canoe-shaped. The epigynum usually has a long scape which is attached to the anterior of the base and bends backwards; the openings are ventral under the scape.

*Eriophora* spp. from Australia are large and hairy; there are 2 dorsal longitudinal bald lines on the tibiae. The spiders construct large orb-webs which have widely spaced spirals and open hubs.

#### ***Eriophora transmarina* (Keyserling 1865)**

*Epeira transmarina* Keyserling, 1865, p. 814; 1886, p. 139.

*Epeira producta* Koch, 1867, p. 178; 1871, p. 55. Thorell, 1881, p. 90.

*Araneus productus*: Simon, 1895, p. 800. Rainbow, 1909, p. 222; 1911, p. 190. Roewer, 1942, p. 831. Chrysanthus, 1960, p. 30; 1970, p. 33.

*Araneus transmarinus*: Rainbow, 1911, p. 195. Roewer, 1942, p. 834. Bonnet, 1955, p. 613.

*Eriophora transmarina*: Musgrave, 1933, p. 1. Archer, 1951, p. 21.

*Eriophora producta*: Archer, 1951, p. 21.

#### **MATERIAL EXAMINED**

2 ♂ (paratypes) *Epeira transmarina* Rockhampton (ZMH); ♀ ♂ *Epeira producta* Sydney (BM); 2 ♂ ♀ *Eriophora transmarina* Mt Greville, SEQ, G. May 24.iii.1974 QM S356, S357, S358 (figured); ♂ *E. transmarina* Brisbane, SEQ, V.E. Davies 11.ii.1979 QM S360 (SEM); ♀ *E. transmarina* Bald Hills, SEQ, A. Carseldine 5.ii.1979 QM S359 (figured).

As well as these 29 ♂♂ and over 100 ♀♀ of these common large spiders from the AM and QM collections were examined.

#### **DESCRIPTION**

**MALE:** Length 13–17 mm. Two long setae on the anterior edge of the cephalothorax between the median and the lateral eyes; 2 long setae between median eyes. The posterior median eyes are smaller than the anterior median eyes, (Fig. 1) and an equal distance apart. There are 2 latero-dorsal tubercles and a posterior tubercle on

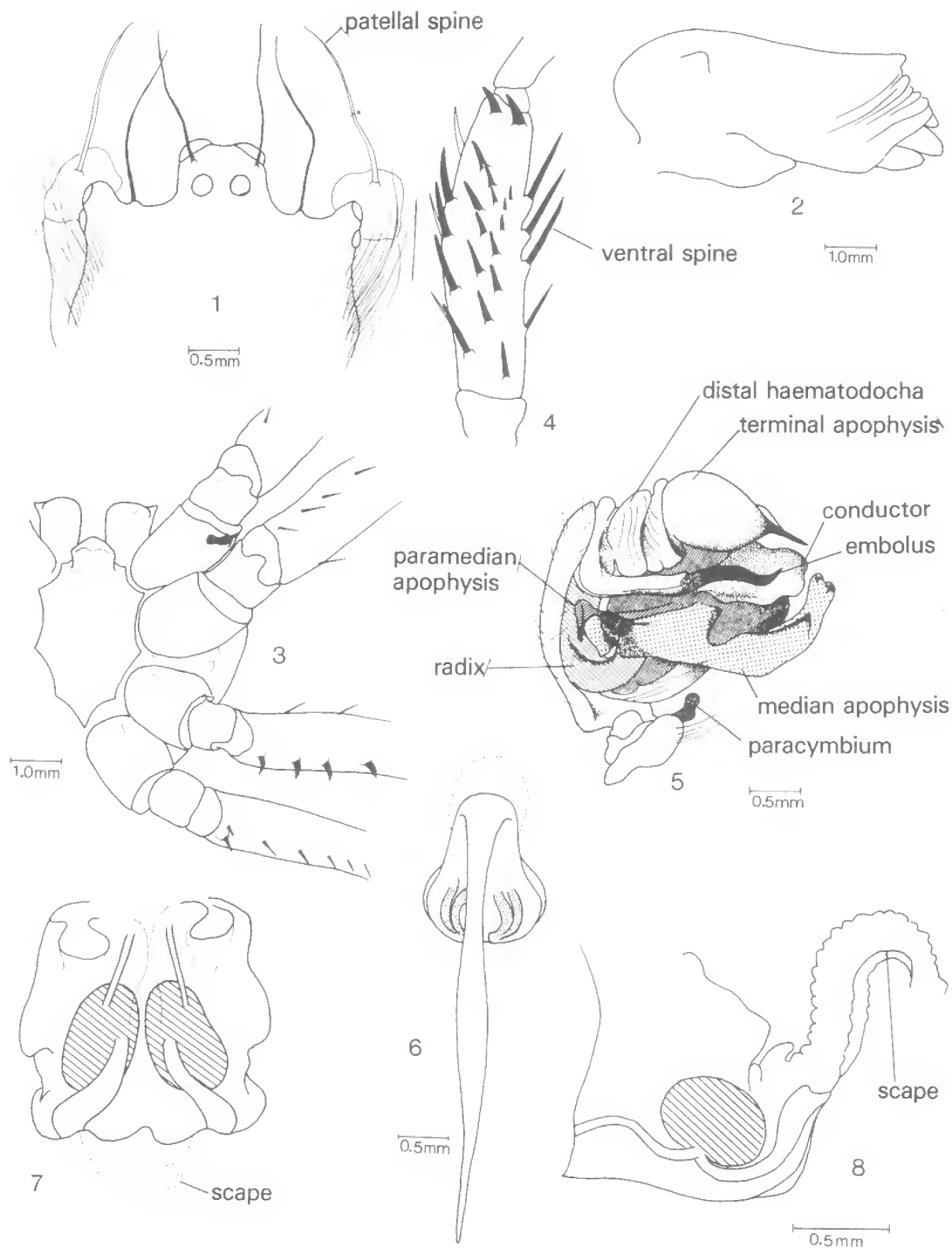
the abdomen. Under this there may be folds around the hind end of the body but no distinct tubercle (Fig. 2). There is a hook on the distal margin of coxa I but none on coxa II (Fig. 3). All males examined have 4 ventral thorn-like spines on femur III and 7–9 retroventral spines on femur IV. Tibia II is swollen prolaterally. It has 3 spines dorsally, 3 large spines and 1 or 2 small spines ventrally and 16–19 prolateral spines, 2 of which are apical and 4 of which may be regarded as upper prolaterals; the lower prolaterals vary in number between 10 and 13 (Fig. 4). ♂ palp (Fig. 5, Plate 1B); see also Chrysanthus (1960, Fig. 47). The paramedian apophysis arises as a proximal extension of the conductor.

**FEMALE:** Length 18–26 mm. The pattern is extremely variable as noted by all previous authors. The cephalothorax is covered with long hairs (Plate 1A). The lateral eyes are not on a stalk and there are no long setae on the anterior edge of the cephalothorax. The posterior median eyes are smaller and closer together than the anterior median eyes. The clypeus is about 1.5x the diameter of an anterior median eye. The length of the scape is 3.5–4.9 mm (average 4.3). There are 4–6 (rarely 3 or 7) proventral spines on femur II. Epigynum (Fig. 6, 7, 8) see also Chrysanthus (1960, Figs. 64, 71).

**DISTRIBUTION:** *E. transmarina* is found along the eastern coast of Australia from New South Wales to Cape York Peninsula (Fig. 16) and in eastern New Guinea.

**BIOLOGY:** The spiders construct large vertical or near vertical orb-webs which have widely spaced spirals and open hubs. The webs are 70–120 cm in diameter measured across the outermost spiral and are usually elliptical with the longest axis vertically. The open hub varies between 2 and 5 cm and may be circular or elliptical; it is in the upper half of the web. The number of spirals is variable; the space between spiral threads is 6–18 mm. The number of radials appears to be fairly constant at 17–20. Though the web is usually left up during the day no kleptoparasites have been seen. The spider rests under leaves to the side or above the web. The egg cocoon which is covered in woolly green-brown silk is placed in a few loosely bound leaves.

Males and females are most plentiful in summer especially in January and February but stray adults have been collected throughout the year. From about March the eggs hatch and the spiders overwinter as juveniles to mature the following summer.



FIGS. 1–5: ♂ *Eriophora transmarina* (QM S356, S357). 1, anterior cephalothorax, dorsal; 2, abdomen, lateral; 3, cephalothorax, ventral; 4, I. tibia II, prolateroventral; 5, I. palp, mesal.

FIGS. 6–8: ♀ *Eriophora transmarina* (QM S358, S359). 6, epigyne, ventral; 7, epigyne, posterior; 8, epigyne, lateral.

***Eriophora biapicata* (L. Koch 1871)**

*Epeira biapicata* Koch, 1871, p. 54.

*Araneus biapicatus*: Rainbow, 1911, p. 182. Bonnet, 1955, p. 422.

*Aranea producta*: Strand, 1913, p. 608 [not *Epeira producta* Koch, 1867, p. 178].

*Aranea biapicata*: Roewer, 1942, p. 825.

*Araneus transmarinus*: Dondale, 1966, p. 1164 [not *Epeira transmarina* Keyserling, 1865, p. 814].

**TYPE MATERIAL**

It has been confirmed by the Naturhistorisches Museum, Stuttgart that the ♀ holotype of *Epeira biapicata* Koch 1871 was destroyed during World War II bombing raids. As the immature specimens from Fiji were doubtfully associated with the nominal species (Koch, 1871, p. 55) they can not be considered part of the type series (ICZN, Article 72b). A male has been chosen as the neotype as the female lacks good diagnostic characters (ICZN, Article 75c, 4). Koch separated the large *Epeira* spp. into those with and those without longitudinal grooves or bald lines on the tibiae. *E. biapicata* fell into the former group which was further divided on the presence or not of a tubercle below the hind point of the abdomen. *E. biapicata* and *E. thryidota* have this tubercle. The types of the latter have not been located.

**MATERIAL EXAMINED**

NEOTYPE ♂, *Eriophora biapicata*, mulga scrub, 64 km west Westmar, SCQ, R. Raven, V. Davies, 9.i.1979, QM S361; ♂♀♀ *Aranea producta*, Central Australia, SMF; ♂ *Araneus transmarinus* det Dondale, Canberra, A.C.T., C.R. MacLennan, 13.ii.1963, CNC; ♀ *A. transmarinus*, Canberra, AM; juvs *A. transmarinus*, Canberra, 5.ii.-15.v.1963, ANIC: 7 ♂, Perth, W.A., WAM 77/489, 78/1, 78/5, 78/10, 78/11, 78/12, 78/14; ♂, Bunbury, W.A., WAM 78/6; ♀, Karrinyup, W.A., WAM 77/490; 2 ♂, Melbourne, Vic., NM; ♀, *A. transmarinus* det. Hogg, S. Brighton, Vic, NM; ♀, Caldwell, N.S.W., NM; 5 ♂, Adelaide, S.A., SAM 5327; ♀, ♂, Murray R. between Blanchtown and Swan Reach S.A., SAM 5327; ♂, Winton, WCQ, QM S362; ♂, 2 ♀, juv, 64 km west Westmar, SCQ, QM S363; ♀, 64 km west Westmar, SCQ, QM S364; ♂, Woodridge, Brisbane, SEQ, QM S365; 2 ♂, Mt. Pleasant, Dalby, SEQ, QM S366; ♂, Mt. Colliery, SEQ, QM S367; ♂, Goondiwindi, SEQ, QM S368; 2 ♀, juv., Kumberilla, SEQ, QM S369; ♀, College View, via Gatton, SEQ, QM S370; ♀, Cunnamulla, SWQ, QM W1477; ♀, Longreach, CQ QM S371; 3 ♀, Canberra, A.C.T., QM S372; ♂, Eastwood, N.S.W., AM KS3144; ♀, Broken Hill, N.S.W., AM KS3145; ♀, Ardlethan, N.S.W., AM KS3146; ♀, Menindee, N.S.W., AM KS3147; ♀,

Bingara, N.S.W., AM K61643; ♀, Strathfield, Sydney, N.S.W., AM K56167; ♀, Canterbury, Sydney, N.S.W., AM KS3148; ♀, Mandurama, N.S.W., AM KS3149, ♀, Earlwood, N.S.W., AM K66688; ♀, Woy Woy, N.S.W., AM KS3150; ♀, Campsie, Sydney, N.S.W., AM K61645; ♀, Katoomba, N.S.W., AM K56200; Putney, Sydney, N.S.W., AM K57451; ♀, Bexley, Sydney, N.S.W., AM K55478; ♀, Willoughby, Sydney, N.S.W., AM K57602; ♀, Lithgow, N.S.W., AM K53530; ♀, Wahroonga, Sydney, N.S.W., AM K61649; ♀, Dundas, N.S.W., AM KS3151; ♀, Naremburn, N.S.W., AM K61120; ♀, Mudgee, N.S.W., AM KS3152; ♀, Annangrove, N.S.W., AM KS3153; ♀, Northam, W.A., AM KS3154.

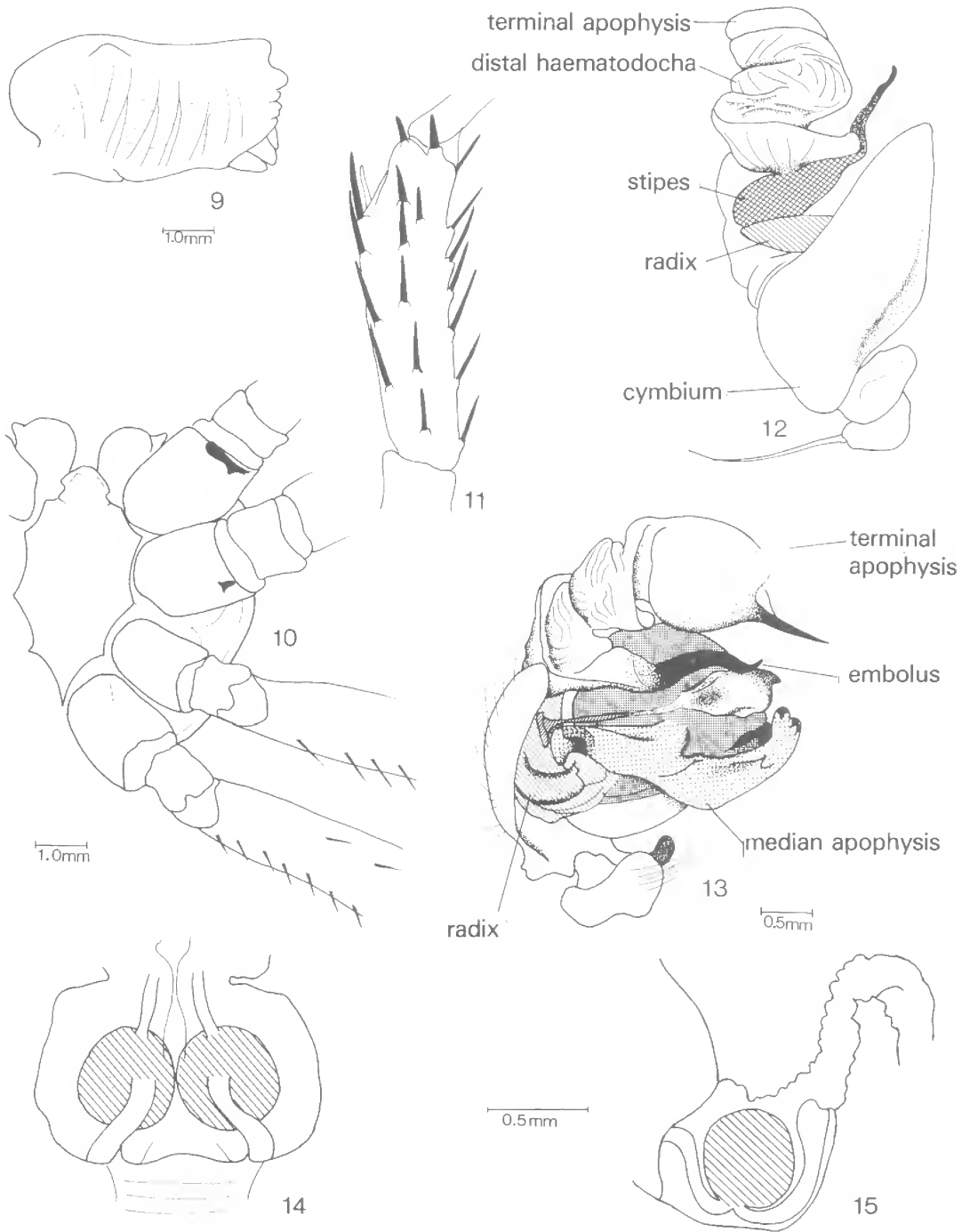
**DESCRIPTION**

MALE NEOTYPE: QM S361: Cephalothorax length 10.0 mm; abdomen length 12.8 mm; total length 19.0 mm. There are 2 long setae on the anterior margin of the cephalothorax between lateral eyes and median projection; 2 long setae between the anterior and posterior median eyes. The latter are smaller than the anterior eyes 5:6; the eyes are an equal distance apart. The abdomen has 2 latero-dorsal tubercles, a posterior one and another posterior tubercle below this (Fig. 9). There is a distal ventral hook on coxa I and a distal spur on coxa II (Fig. 10) as noted by Dondale (1966). There are 5 spines on femur III and 9 retro-ventral spines on femur IV. Tibia II is swollen prolaterally. It has 3 dorsal spines, 7 ventral spines and 12 prolateral spines — 2 apical, 4 upper and 6 lower prolaterals (Fig. 11). ♂ palp (Figs. 12, 13); see also Dondale (1966, fig. 2G). This is very similar to *E. transmarina* however the terminal apophysis is relatively larger.

VARIATION: Males examined varied in length from 11 to 19 mm. The abdomen is either uniform in colour or has a dark median stripe. Femur III with 4-7 spines. Tibia II with 10-15 prolateral spines and 6-10 ventral spines.

FEMALE: Length 14-27 mm. The pattern is variable. Anterior median eyes are larger than posterior median with an equal space between eyes. The clypeus is wide, twice the diameter of an anterior median eye. The scape length is 3.0-4.10 (average 3.6 mm). There are 5-7 spines on proventral femur II. Epigynum (Figs. 14, 15); see also Dondale (1966, fig. 2E).

Apart from the presence of the second posterior tubercle on the abdomen in *E. biapicata*, the females of both species are very similar though the scape of *E. biapicata* tends to be shorter, femur II has more proventral spines, and the clypeus is



FIGS. 9–13: ♂ *Eriophora biapicata* (QM S361). 9, abdomen, lateral; 10, cephalothorax, ventral; 11, 1. tibia II, prolatero-ventral; 12, 1. palp, dorsoprolateral; 13, palp, mesal.

FIGS. 14–15: ♀ *Eriophora biapicata* (QM S364). 14, epigyne, posterior; 15, epigyne, lateral.



wider than in *E. transmarina*. The males of *E. biapicata* are separated on the presence of the spur on coxa II and the absence of the 4 heavy thorn-like spines on the ventral surface of femur III.

#### DISTRIBUTION

*E. biapicata* is found in Victoria, South Australia, Central Australia, West Australia and

in areas west of the Great Dividing Range in New South Wales and Queensland. Occasionally a spider, probably transported by vehicles, has been found in more eastern areas of Queensland (Fig. 16). In Sydney, N.S.W., female *E. biapicata* were found in several localities. Neither *E. biapicata* nor *E. transmarina* has been found in Tasmania (Hickman, pers. comm.). *Araneus brouni* from New Zealand has a short epigyne and is distinct from these species.

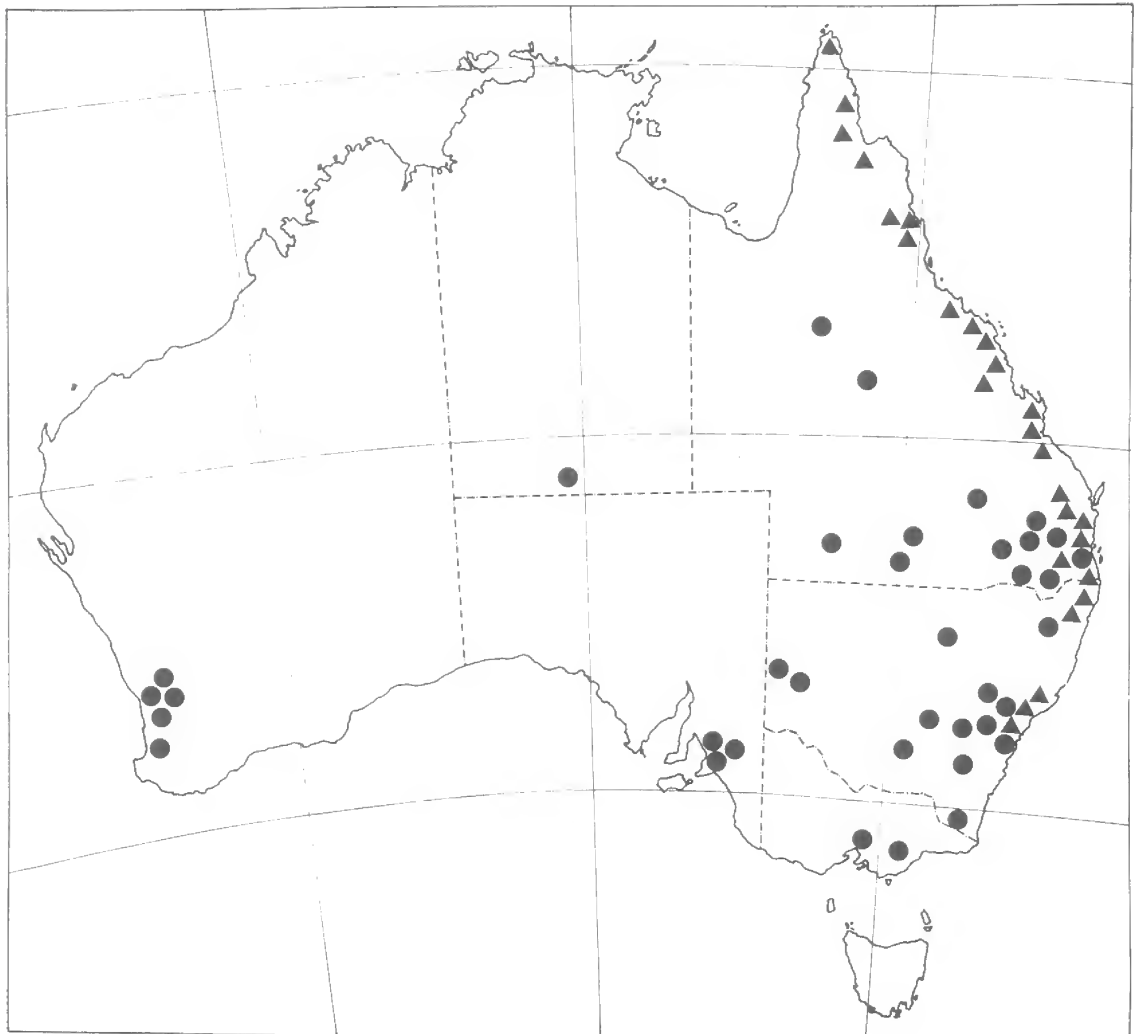


FIG. 16: Map showing distribution of *E. transmarina* (▲) and *E. biapicata* (●).

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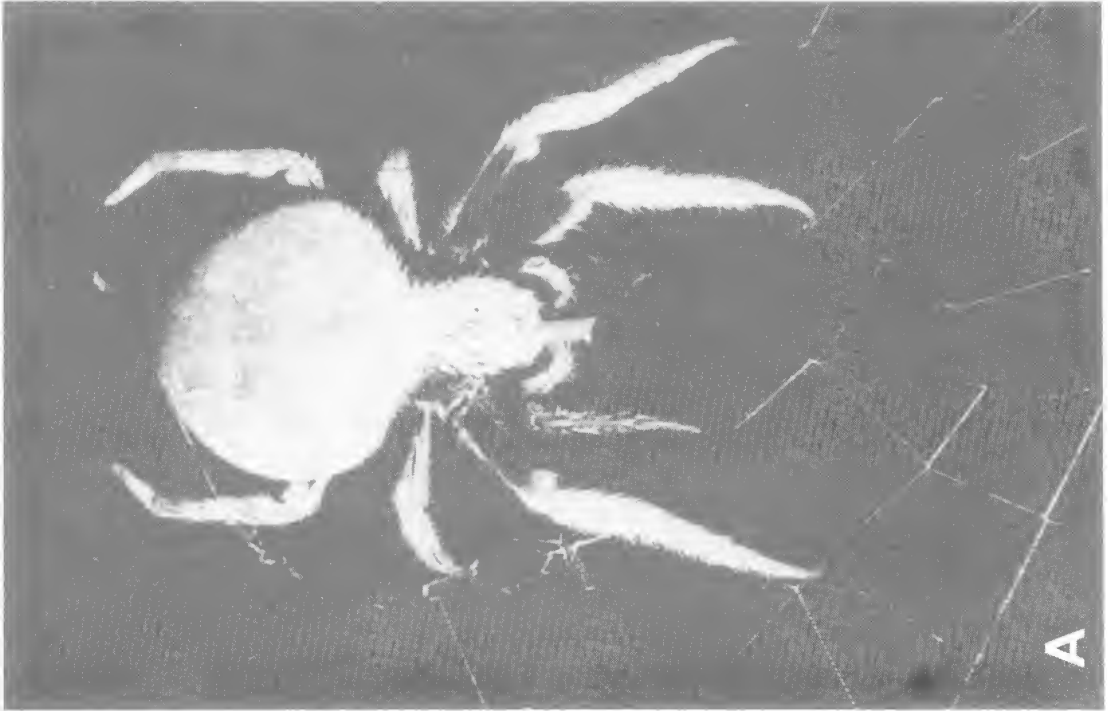
PLATE I

*Eriophora transmarina*

A: ♀ in web, feeding

B: ♂ (QM S360), l. palp, mesal, marker = 80  $\mu$





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